SFWMD SCADA Overview

- What's SCADA?
- SCADA at the District: a brief history
- SCADA improvements: driving forces
- What is the Water Management System?
- Ongoing WMS efforts

What's SCADA?

- Supervisory control and data acquisition
- Category of software application program
- SCADA systems include hardware and software components
- Scans all remote data
- Logs data and system events
- Alarms abnormal conditions
- Sends operator commands to remote devices

SCADA at the District: A Brief History

Communication and Control (C&C) System

- 1940-70s: build out of the flood-control infrastructure
- 1976: installation of the current C&C system (18 gates, no pumps)
- 1976-2000: expansion of microwave and remotes (more than 80 gates and pumps)
- 2000-present: conversion to Motorola MOSCAD remotes (more than 75 gates and pumps)

SCADA at the District: A Brief History

Hydrometeorologic Monitoring System

- 1970: Legislature expanded District mission to include environmental mission elements
- 1987: First electronic recorders installed (Dairy Project, 22 sites)
- 1990-1994: Standardized on Campbell Dataloggers
- 1992: Hurricane Andrew initiated RF telemetry
- 2001-present: Begin conversion to LoggerNet

SCADA at the District: A Brief History

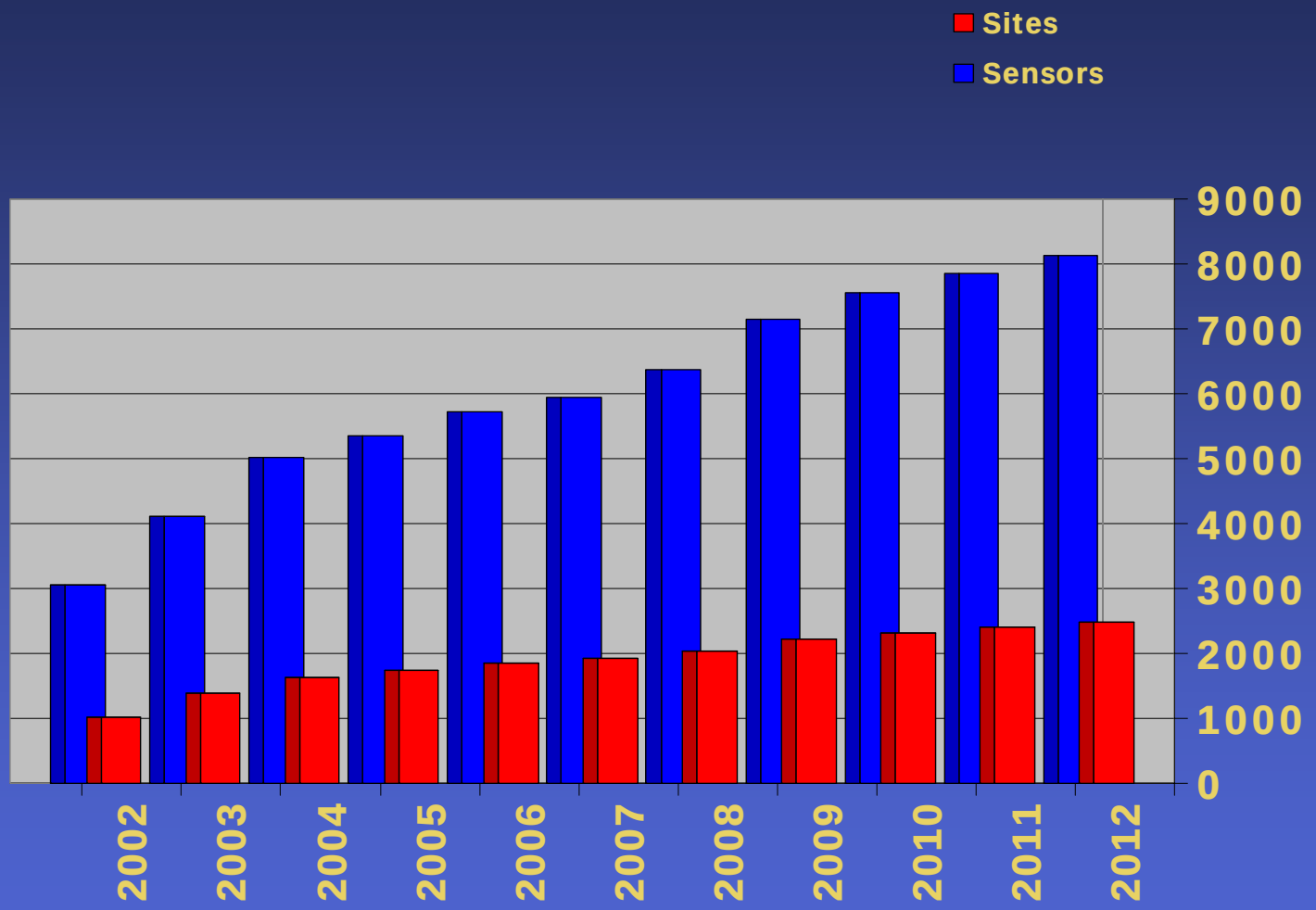
Two significant data acquisition and processing systems

- Duplicate instrumentation at same sites
- Duplicate communications and processing systems
- Complex methods to share data between systems

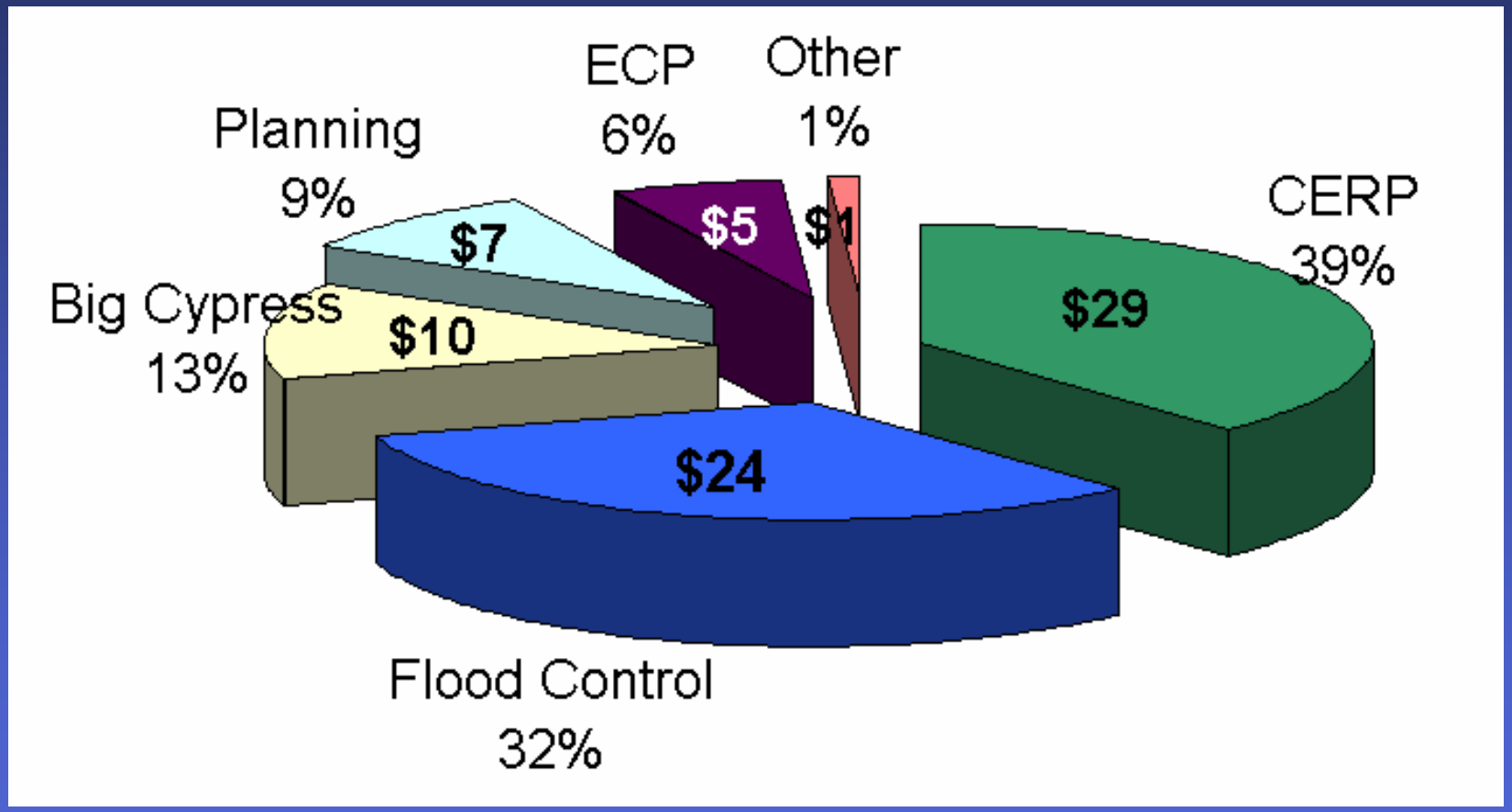
WMS System Expansion
Driving Factors

- Everglades Construction Program
- Consolidated Everglades Restoration Plan
- Capital improvements
- Statutory and other legal mandates

10-Year Site & Sensor Projection



10-Year Site Cost by Program - $76M

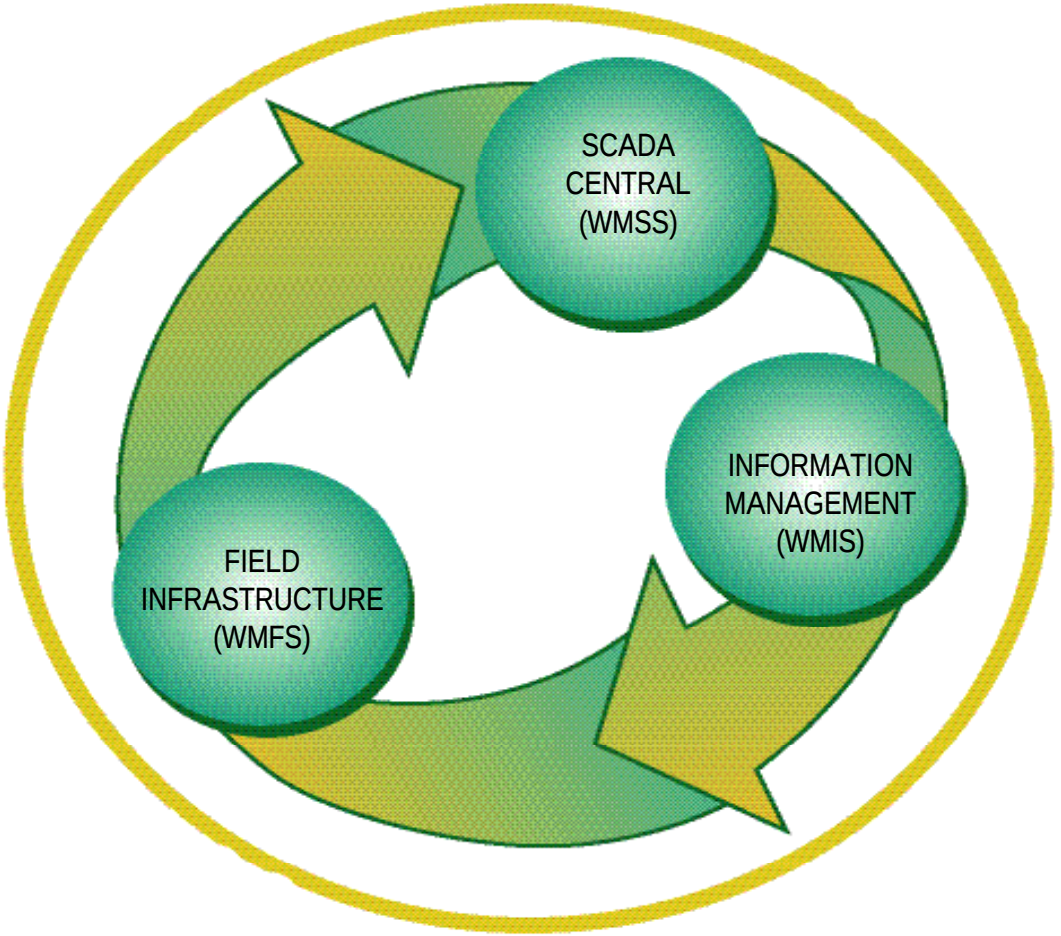


WMS Needs Assessment

Major Recommendations

- Replace the existing central SCADA system
- Develop a detailed field infrastructure plan focussing on communications
- Develop a comprehensive data access and archive requirements plan

What is the District Water Management System?



WMS Components: Field Infrastructure

Systems

- Sensors–environmental, structure monitoring
- Actuators–pump, gate control
- Remote Terminal Units (RTUs) –RACUs, MOSCADS, CR10s
- Data acquisition, test, maintenance, problem-tracking systems

Operations

- Canals, levees, gates, pump stations, ASRs
- Water Resources Management
- Public Works
- External stakeholders (DEP, USACOE USGS, Public, etc.)

ESDA & OMD

WMS Components: Communications

Systems

- Microwave backbone
- Spread-spectrum
- RF feeder networks
- District WAN interfaces (T1, etc.)

Operations

- Ethernet LAN
- Intranet (District)
- Internet (external)
- WPB SONET (campus) backbone

(ITD) Network Engineering

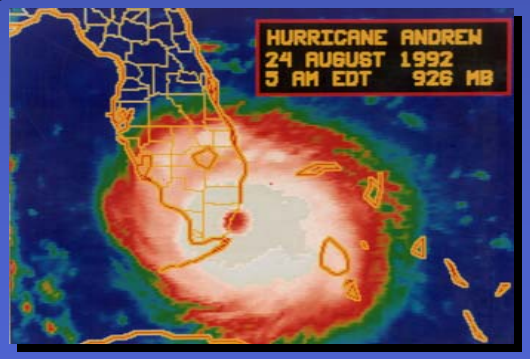
WMS Components: SCADA Central
(Supervisory Control and Data Acquisition)

Systems

- Software/hardware systems for data acquisition and control
- System administration
- Software development
- 24/7 support

Operations

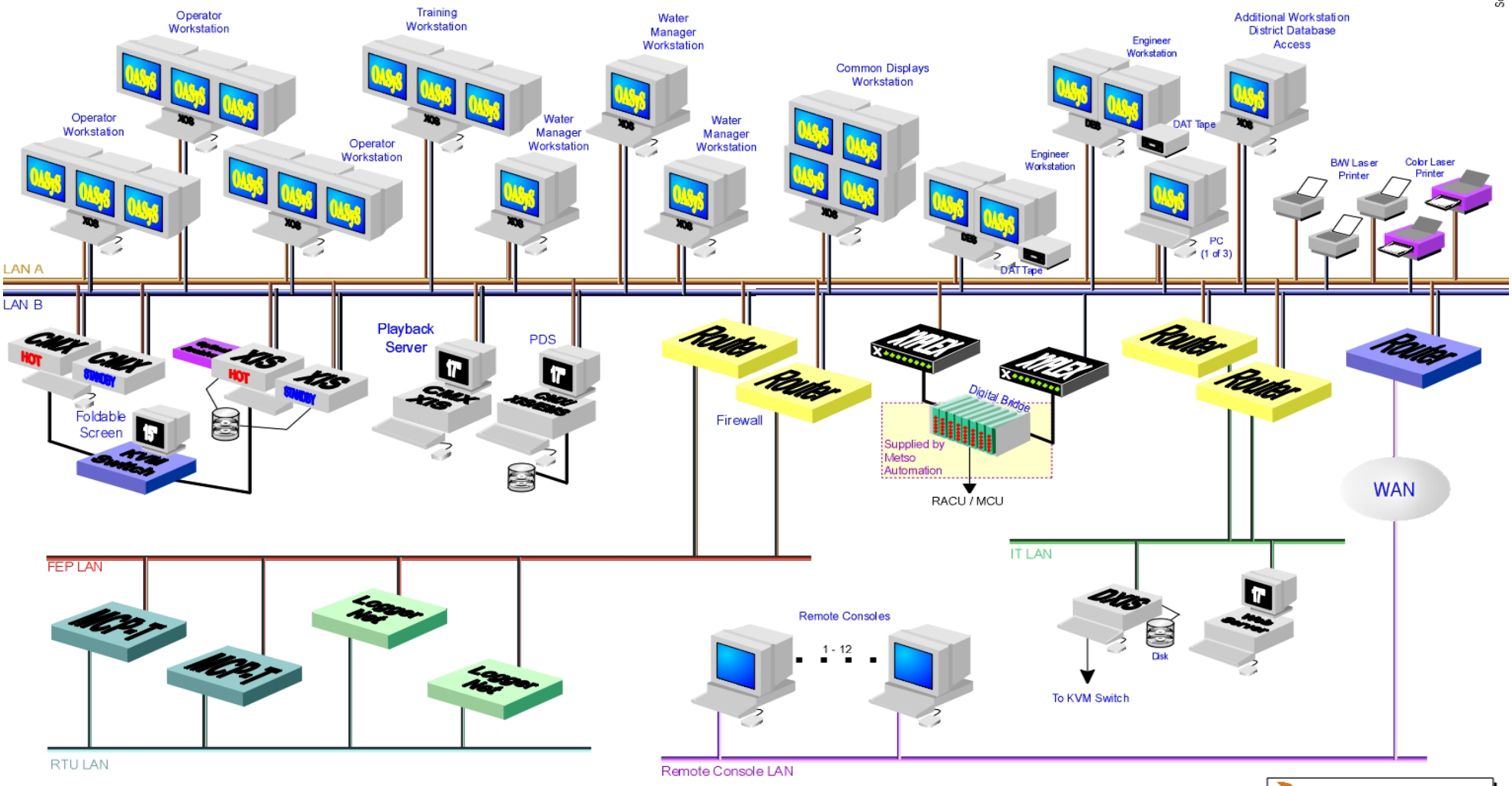
- Operations Control Center (OCC) staff
- Water managers
- SCADA technicians
- OMED engineers & meteorologists



(ITD) Infrastructure/OCC

Water Management SCADA System (WMSS)

WMSS Primary Control System



South Florida.cdr February 2002

metso automation

Proposed OASyS System for:
South Florida Municipal Water District
Water Management SCADA System
June 5, 2002 Fig. 1 Mina Vagianou

Water Management SCADA System (WMSS)

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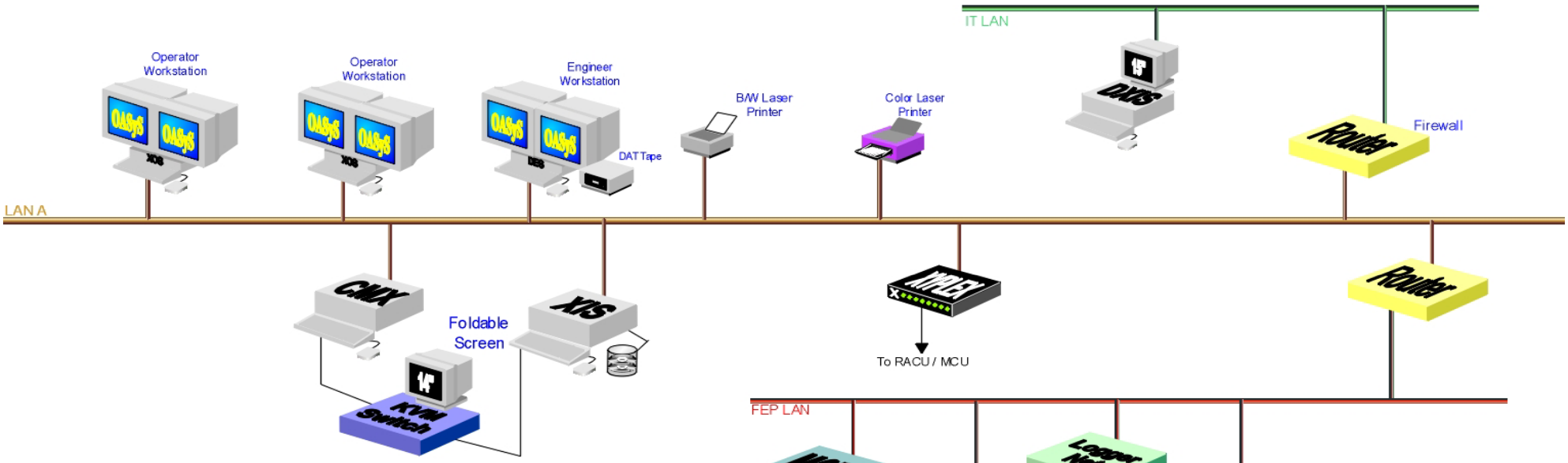
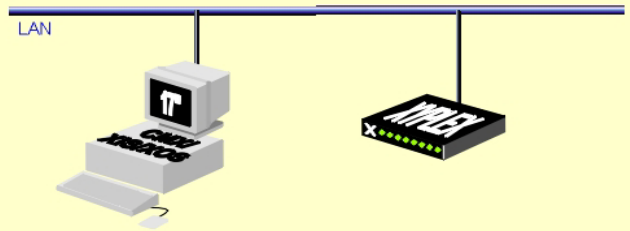
WMSS Backup Control System



Sub-station



metso automation

Proposed OASyS System for:
South Florida Municipal Water District
Water Management SCADA System

June 5, 2002 Fig. 2 Mina Vagianou

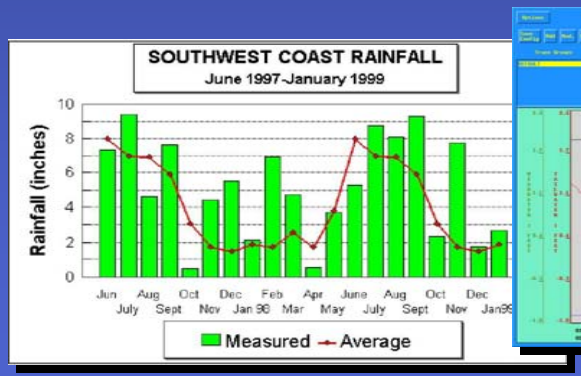
WMS Components: Information Management

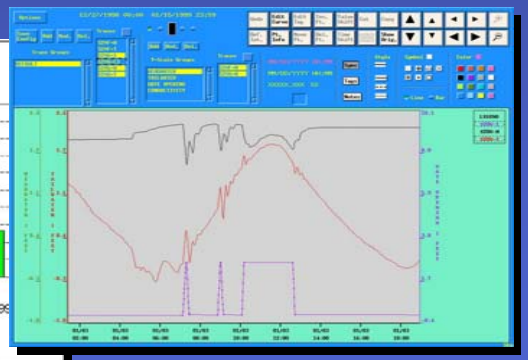
Systems

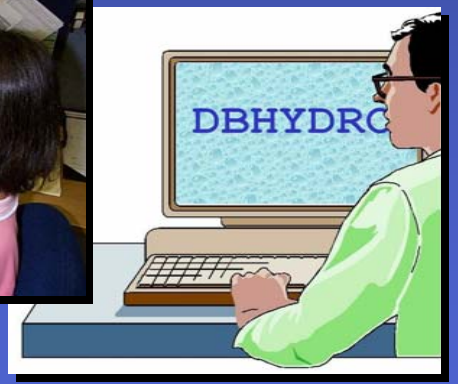
- Data(base) management/warehousing
- Data verification and validation
- Quality control/quality assurance
- Analysis, Web publishing

Operations

- Water Resources Management
- Public Works
- External stakeholders (DEP, USACOE, USGS, etc.)
- Public access by Web, reports, etc.







(ITD) Infrastructure & Application Services/EMA

WMS Ongoing Improvements

- Conversion of all field sites to real-time telemetry
- Increase communications bandwidth and reliability
- New WMSS and consolidation of all SCADA systems
- Dedicated system for enterprise access and consistent interface